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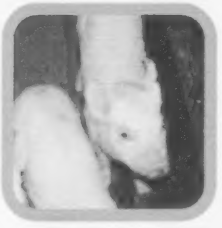

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Ministère de l'Agriculture, de l'Alimentation et des Affaires rurales

Ontario

Herd Health Visits Part 2 - Establishing Dialogue among Peers

Neil Anderson, Cheltenham, ON and
Tim Blackwell, Veterinary Science Policy Unit, OMAFRA, Elora, ON

NOTE: This is a follow up to Part 1 that appeared in the April 2014 issue entitled Herd Health Visits Part 1

Having learned herd health management via lectures in veterinary school and continuing education courses, it is natural to use a similar format to transfer herd health management information to our clients. "This is what the research shows, so this is what you should do," seems straightforward enough. Unfortunately, this approach seldom results in meaningful management changes on a farm.

Discussions with owners regarding changes to their husbandry practices need to be undertaken with care. Their defence of, or justification for, their practices in certain situations seem impenetrable or they simply will not consider changing. "Well, OK then," or "You're probably right," provides a graceful exit and gives us a chance to prepare for another day without causing conflict. When the opportunity for dialogue exists, there are approaches that are more likely than others to lead to changes in attitude, opinion, knowledge and ultimately, management practices.

"I used to believe that too..... but I don't anymore;" "How's that working for you;" and "What are you going to do now" are three phrases that can result in meaningful dialogue and management changes.

Calf feeding practices are one example where traditional beliefs are difficult to change. New feeding practices on some farms resulted from discussions about dogma and myth that were entrenched in the dairy industry. When producers told Neil that too much milk caused diarrhea and killed calves, he learned to reply, "I used to believe that too." Allowing that statement to hang in the barn air for a few seconds can be very effective when followed by "but not anymore." With this wedge in place producers often ask why we changed our opinions or recommendations. Several responses here may work but one is, "Why would Mother Nature, i.e. suckling the cow, provide free-access milk if it killed calves?" From this point forward calf feeding can be discussed between peers rather than delivered in lecture format. Discussions work better to change behaviour than a pedagogical approach.

Dairy barn designs provide an abundance of opportunities to engage clients in herd health

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discussions. When told that heifers could not rise easily in conventional stalls because they were *dumb*, "I used to believe that to" starts you off on even ground. After following with "but not anymore," one can query why, if heifers were truly dumb, would they get so much smarter when moved to a well-bedded box stall. In these situations we can spend time quoting research to someone with a lifetime of experience and dedication to calf or heifer rearing. However, to engender change effectively, we should not pronounce but partner. We may have been lectured on herd health in veterinary school - lecturing works best in classrooms, but not so well in barns. Peers can also be powerful forces for creating change. Taking a client to other farms to show them free-access milk feeding systems or new stall dimensions can prove more effective than describing the same. In other cases, an on-farm comparison may be all that is necessary to induce change in a producer's thought processes.

At a free-stall dairy barn near Cork, Ireland, Neil saw alleys littered with large rocks. In some heifer free-stall barns in South-Western Ontario, he saw alleys fitted with a makeshift grid of lumber over the slatted floors. The Cork owner was deterring resting in alleys to improve cow cleanliness and the Ontario owners were training heifers to use free-stalls. It would be easy to criticize these approaches with, "it is the stalls that are the problem, not the floors," and most likely the conversation would end there along with any chance for change. Or one could ask, "How's that working for you?" By engaging in conversation and not criticism we will learn of the immediate gratifying success because animals are no longer resting in the alleys. With some congratulations on this success, the owner may share his frustrations about unanticipated problems such as perching in stalls, standing in alleys or lameness. The door is now open to discussions on how to make stalls more comfortable than alleyways. After discussions on herd health practices the herd veterinarian may think she understands the owner's reaction to what has been discussed. However the last question of the day tells us how much if any progress we have made. Has the owner been receptive to suggestions or has she rejected every alternative discussed? This is when the most important question of every herd health visit is asked, "What are you going to do now?" Asking this question clearly respects the fact that it is the owner who is responsible for the management of the farm. But it also lets us evaluate which parts of the discussion if any hit home. The owner's plan represents a commitment to action. It is where we learn which parts of the discussion resonated with the owner and which did not. And it leads to the final question of the visit, "When can I come and see how the cattle are doing? I am anxious to see the results you get from this new approach." This final exchange shows the producer that you sincerely want to partner with her on improving animal health and productivity, sets a time frame in which to measure improvement, and allows you to provide additional resources that may be of benefit within the new management approach.

"I used to believe that too…… but I don't anymore;" "How's that working for you;" and "What are you going to do now" are three phrases that can make the herd veterinarian a partner rather than a dreaded expert in herd management.

Porcine Epidemic Diarrhea an Opportunity to Eradicate?

Sue Burlatschenko, Goshen Ridge Veterinary Services and Tim Blackwell, Veterinary Science and Policy, OMAFRA, Elora, ON

There have been few new cases of Porcine Epidemic Diarrhea (PED) reported in Ontario since April of this year. This was not expected based on the U.S. pork industry's experience with the disease last summer. It appears that the control measures put in place in Ontario to date (perhaps along with warmer temperatures) have reduced the spread of the PED virus in the province. With approximately 100 sites suspected to be infected with PED and little on-going spread, it is reasonable to consider eliminating this virus from infected sites. A goal of eradicating the virus entirely from the province no longer seems farfetched. What then should veterinarians recommend to producers who have had PED diagnosed in their pigs this year?

The first step should be to contact managers/owners to determine the state of swine health on the farm.

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Some previously infected farms have reported a return to pre-outbreak productivity within a few months of the outbreak while other farms report persisting problems including scours in sows and/or suckling and growing pigs, increased pre-weaning mortality, and decreased reproductive performance. Clinical signs observed by producers several months following a PED outbreak are often assumed to be the lingering effects of PED despite the fact that the problems reported are not always typical of those associated with PED. Therefore a full investigation of the health problems of concern in swine herds after a PED outbreak, including testing for PED, should be undertaken. Intermittent scours at two weeks of age in a post-outbreak herd may be thought to be PED-related; however, laboratory testing may reveal coccidiosis, rotavirus or another enteric pathogen. Poor reproductive performance several months post-PED is as likely to be due to PRRS or a non-infectious etiology as to the lingering effects of PED.

For example, recently a PED affected farm contacted its herd veterinarian because of signs of watery diarrhea in a breeding room. Numerous sows were affected and no other clinical signs were observed. Fecal samples were taken from affected animals and submitted in viral transport media. The samples tested negative for PED virus and deltacoronavirus as well as ileitis and dysentery. This case underscores the importance of thorough diagnostic work-ups rather than falling back on the easy assumption that the re-occurrence of diarrhea in a PED-positive herd must be the result of PED.

When a complete investigation of the clinical signs does not indicate active PED infection as the cause and following the diagnosis and treatment of the problems identified, it is worthwhile to determine if and where PED virus exists on a farm. Environmental sampling is an appropriate first step. Any scouring animals should always be included in a PED monitoring effort along with environmental sampling. There is not a universally accepted method to determine a PED-free status for a site or location, therefore the use of Swiffer cloths to swab high traffic areas or the use of cotton ropes to collect saliva samples from pens of pigs are two useful methods to search for PED virus on a farm.

Individual Swiffer cloths can be used to swab one meter square sections of high traffic areas in locations suspected to be contaminated with PED virus. Material collected from five Swiffer cloths moistened with saline or viral transport medium can be submitted as five individual samples but requested to be pooled for testing at the laboratory to reduce costs. In breeding and gestation areas, high traffic areas such as common alleyways where sows enter or leave the facility, scales, boar carts, storage areas for AI supplies, medicine cabinets, and other shared sites are ideal areas for swabbing and submitted samples can be requested to be pooled for testing. Similar approaches can be used when using Swiffer cloths in farrowing, nursery, or growing sites.

The vast majority of growing pigs are attracted to novel objects and if a section of cotton rope is hung in the pen, the rope will be well chewed within 30 to 45 minutes. The rope can then be removed and placed into a freezer bag where the saliva can be pressed out of the rope and submitted for PCR testing. PED virus does not infect tissues other than the intestinal epithelium. The pigs' natural curiosity results in their mouths acting like Swiffer cloths to collect material in their environment and subsequently deposit that material on the rope when they chew on it. For initial screening purposes, three to five rope samples can be requested to be pooled at the laboratory for testing to reduce testing fees.

If initial monitoring fails to identify PED virus at locations tested, more intensive sampling is indicated preferably without pooling. If PED virus can no longer be identified in an area on the farm despite intensive laboratory testing, introducing a few PED-negative sentinel pigs can further increase confidence in a PED-free status. This must be done carefully so as not to introduce other diseases to the herd. In a sow herd the best sentinel pigs would be from the normal source of replacement gilts, assuming that source is PED-free. In an all-in/all-out nursery or finishing barn, PED-negative pigs from the same farm system, assuming not all sites have been infected, would make appropriate sentinels. In the absence of a compatible source of sentinels, serology can be employed. If a representative sample of pigs from a site fail to seroconvert on samples collected on entry

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Costs covered by Ontario Pork include:

Item	Description/Criteria	Funding Guidelines
Disease investigations and development of control and elimination plans	Biosecurity assessment, infrastructure and/or procedural planning	$600 X farm/system
Diagnostic testing for monitoring and elimination	Lab work to determine if PED has been successfully eliminated from their site.	$30/lab test X 24 samples/site
Veterinary costs associated with monitoring and elimination	Site visits, sample kits, administration	Costs associated with description/criteria to a cap of $300/site

and four to six weeks later, this adds confidence to the diagnosis of a PED free status.

It is important for swine herds that have experienced a PED outbreak to know if and where PED virus exists on the farm. This is important information for every herd as it affects how clinical signs such as scours are treated on the farm, how replacement gilts are introduced to the herd, how pigs are marketed and how certain aspects of biosecurity are handled. We do not have sufficient knowledge about this new virus to say with certainty how it will behave in any one herd over time. Establishing an understanding of the ecology of the PED virus on an operation is important for optimizing productivity in that herd as well as improving provincial biosecurity for this new virus.

Recognizing the importance of controlling this infection within the province, as well as on individual swine farms, Ontario Pork, through funding from the provincial government, is supplementing the cost of PED testing on swine herds with a laboratory confirmed diagnosis of PED. Producers can submit invoices directly to Ontario Pork or through their local ARC&E program. This is an ideal opportunity to assist your producers in understanding the ecology of PED virus on their farms and to ensure that productivity is at its optimum during this much awaited period of reasonable margins in swine production.

After You Leave the Farm

Kathy Zurbrigg, Veterinary Science and Policy, OMAFRA, Elora,

On a recent farm visit the producer reported that he had been having issues with increased sow mortality in a gestation barn he had renovated the previous year. The producer had implemented several management changes and the mortality problem disappeared. As someone involved with planning pen design and management of the system, I was frustrated that the producer had not contacted me as soon as the problem was observed. After asking repeatedly, "why didn't he call me", I began to ask, "why didn't I call him"? The answer was simple, I was busy and forgot.

Livestock veterinarians know their practice would benefit from better follow-up communication with producers. It doesn't always have to be the veterinarian who does the follow up. With a few agreed upon guidelines in place (eg. timelines for when to make the calls and a few key questions for various situations) the clinic's technicians or staff could follow up with producers on matters ranging from the status of a sick animal and it's response to treatment, to how or if management changes are working. A proposed follow-up call list could be generated by clinic staff from the veterinarian's medical record/billing sheets and submitted to the veterinarian for comments. This would minimize the time required of the veterinarian for organizing such call backs.

The benefits include: **1) Improved Client Relations**: Follow-up calls send the message that the resolution of the problem you visited the farm for is important to you. The effect of follow-up calls is great. Once, after a Saturday visit to a walk-in clinic with my sick toddler, the doctor called me the next day to check in and see how she was doing. I was so impressed (and surprised) with this display of concern that I recommend him to everyone. When you feel like someone went out of their way to help you, it becomes easy to

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return the favour. Having this type of relationship with your clients may improve the likelihood of even your toughest recommendations being carried out.

2) Improved Knowledge: If you suggest a treatment or management change for an issue and the issue does not resolve, you need to know why. Were the recommendations/treatment carried out correctly or even at all? Was the infection resistant to the first antibiotic chosen? Or was it not the right solution?

3) Improved health monitoring or "surveillance": You can call it surveillance or just updating records but after your tech/staff has followed up on the specific issue with the producer there is the opportunity to ask a few other questions of importance, such as are you still vaccinating for X? What is your mortality rate in the finishing barn? Have you heard about the latest industry initiative or research project?

4) Increased Revenue: Odds are good that after you left the farm the producer remembered a question they forgot to ask you or a product they forgot to purchase from you. The technician or staff person doing the follow-up can relay the question to you and the answer back to the producer. This is a more efficient use of the veterinarian's time. These questions may also lead to the generation of more work if the answers require the booking another farm visit. With the veterinarian's approval, any requested products can be delivered by the clinic member that is closest to the farm.

Follow-up communication is not a "one size fits all" concept. The technician or staff person responsible for follow-up communication can find the preferred method of contact for your clients, be that a call at lunch time, an email, a text or dropping by the farm if you have technicians in the field. Regardless of the method, follow-up communication through staff members raises the quality of medicine delivered and the level of client service.

Not Enough Teats to go Around: Why adding milk replacer might be the solution

Kathy Zurbrigg, Veterinary Science and Policy Unit, OMAFRA, Elora, ON
Heather Neureuther, OMAFRA Summer Student

Headlines such as, "Pig litter sizes hit record level" (1), and "Big Litters Put Farms in Hog Heaven" (2) have become common occurrences in the past few years. Optimizing sow management has resulted in the average live-born litter size increasing from 11 pigs in 2007, to 12 pigs in 2012 (3). A key point to keep in mind is that 12 pigs born alive per litter is average. This means that many farms are attempting to raise even larger litter sizes; 14 to 15 pigs born alive per sow is not uncommon. While increasing litter size is a notable accomplishment of the swine industry, it also creates new challenges. A typical sow has 14 teats, of which some may not be functional. How can she successfully nurse the increasingly larger litter sizes that she is producing?

Common responses to large litter sizes include utilizing a nurse sow or cross-fostering the extra piglets. These solutions, however, are not always practical or successful. Adding a simple milk feeder to the farrowing crate can provide the extra nutrition that large litters require.

There are two different styles of piglet milk replacer feeders on the market: nipple systems and trough systems. There are pros and cons to each design. Trough or dish-style feeders are typically less expensive and do not often require maintenance or replacement parts. However, due to the open design of the troughs, the milk replacer is exposed to insects, dunging by the piglets, dirt, and other sources of contamination in the farrowing crate. Piglets may also drag manure directly into the feeder as they have the opportunity to climb into the trough. Nipple systems have a lesser chance of becoming contaminated, because the milk replacer is not exposed to the environment. Nipple systems, however, can be more expensive and piglet chewing will cause leaky nipples which require replacement.

Figure 1 shows an example of a nipple feeder. Figure 2 is an example of a trough style feeder. Some feeders like the one shown in Figure 1, are able to keep

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Figure 1. Example of a milk replacer feeder using nipples.

Figure 2. Example of a trough-style milk replacer feeder.

the milk replacer warm by using electric heat (Figure 1).

Without purchasing a feeder, producers can try feeding milk replacer using an existing dish-style creep feeder or make their own feeder by attaching nipples to a bucket.

Regardless of what style of feeder is used, the milk replacer must be appealing to the piglets. Most commercially available piglet milk replacers recommend that the mixed product should not be kept longer than 24 hours, and twice daily refreshing of product is preferred. The limited "crate-life" of piglet milk replacers is less than ideal for busy farms and may lead to two suboptimal scenarios. Producers may only mix up enough milk replacer to ensure it is consumed within 24 hours or less, which can leave piglets without continual access to milk. The other option involves twice daily removal of milk, cleaning of containers and mixing of new milk replacer, which requires extra labour.

To decrease labour, one alternative is to use a milk replacer that is acidified to inhibit bacterial growth allowing it to remain fresh for up to 48 hours at room temperature. However, available brands of piglet milk replacer in Ontario are typically not acidified. Therefore, as an alternative, some swine producers in Quebec have been successfully using acidified goat milk replacer to provide added nutrition to piglets without needing to clean feeders as often. Acidified goat milk replacer is being used instead of piglet milk replacer due to its lower cost and easier accessibility.

With the industry push to increase litter size, comes new challenges and opportunities to ensure piglet nutrition is adequate. Cross fostering and nurse sows can be used, but milk replacer should be considered as an effective option. Acidified milk replacers increase the length of time the milk remains fresh, thereby, reducing the labour involved with filling and cleaning feeders twice a day. Any questions regarding products, use, or management can be directed to kathy.zurbrigg@ontario.ca.

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Using Hydrogen Peroxide to Preserve Goat Milk Replacer

Heather Neureuther, OMAFRA Summer Student, Elora, ON

Acidifying milk replacer is one method to prevent spoilage when ad lib feeding young livestock. Some commercial milk replacers contain an acidifying agent to inhibit spoilage and maintain freshness for 24-48 hours. However, containers used to mix or dispense milk replacer are not always thoroughly washed between uses. The addition of small amounts of food -grade 35% hydrogen peroxide has been shown to further inhibit spoilage (1). The following experiment compared the length of time acidified goat milk replacer, with and without added hydrogen peroxide, would remain fresh when held in a clean container, in a container that had not been washed between uses or in a container that still contained spoiled milk replacer.

Materials and Methods

Commercial acidified goat milk replacer with and without added food-grade 35% hydrogen peroxide (H2O2) was used in this experiment. Milk replacer was prepared according to label recommendations by blending 112.5g of milk replacer powder with 375mL of hot tap water for three minutes, then adding 337.5mL of cold water and blending for an additional three minutes. The milk replacer was then divided into three 250mL allotments consisting of a control milk replacer (untreated acidified milk replacer), a 0.02% H2O2 acidified milk replacer (0.14mL of 35% hydrogen peroxide in 250mL of milk replacer) and a 0.035% H2O2 acidified milk replacer (0.25mL of 35% hydrogen peroxide in 250mL of milk replacer). Three treatments were applied to these mixtures. For treatment 1, the three milk replacer mixtures were poured into clean (washed and dried) containers. For treatment 2, the three milk replacer mixtures were added to three containers that had held the respective milk replacer types for the previous 72 hours. These containers were emptied immediately, but not washed, prior to adding the 3 test batches of milk replacer. For treatment 3, 125mL of 72-hour-old milk replacer (untreated, 0.02% H2O2 and 0.035% H2O2) was left in each container and the three matching types of fresh milk replacer mixtures were added on top. All containers for each scenario remained uncovered, on a countertop, and at room temperature (21°C). The pH, smell, and appearance was recorded twice daily for all samples for 52 hours.

Results

The starting pH for the three milk replacer mixtures was between 5.8 and 5.9. The slightly acidic pH was due to the citric acid and calcium formate which are added by the manufacturer as preservatives. Figure 1 depicts the pH changes of the milk samples for each

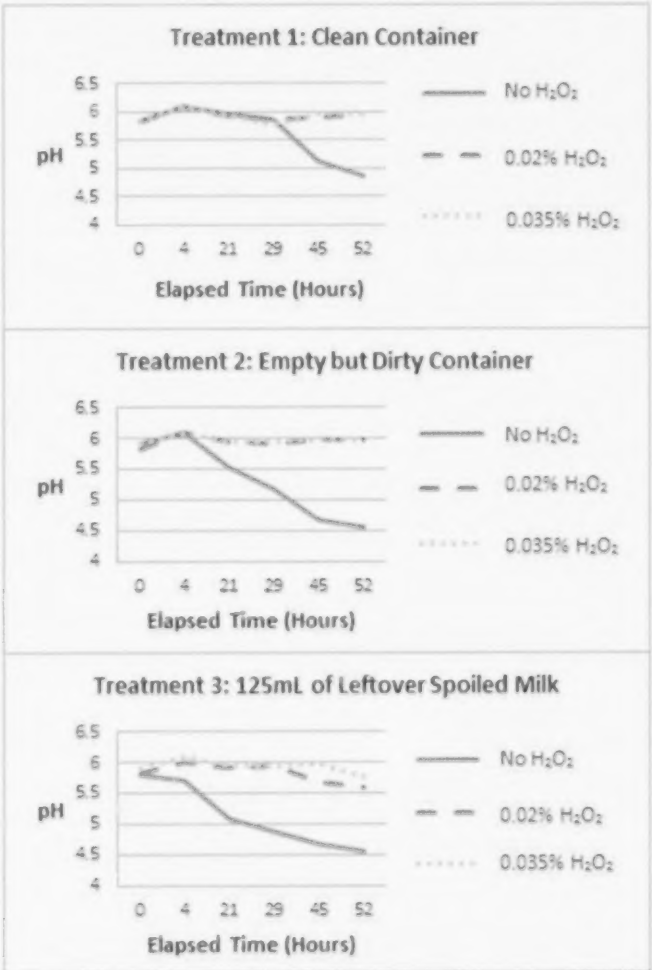

Figure 1. Changes in pH in 3 mixtures of acidified goat milk replacer (No H_2O_2, 0.02% H_2O_2, and 0.035% H_2O_2) exposed to 3 different treatments.

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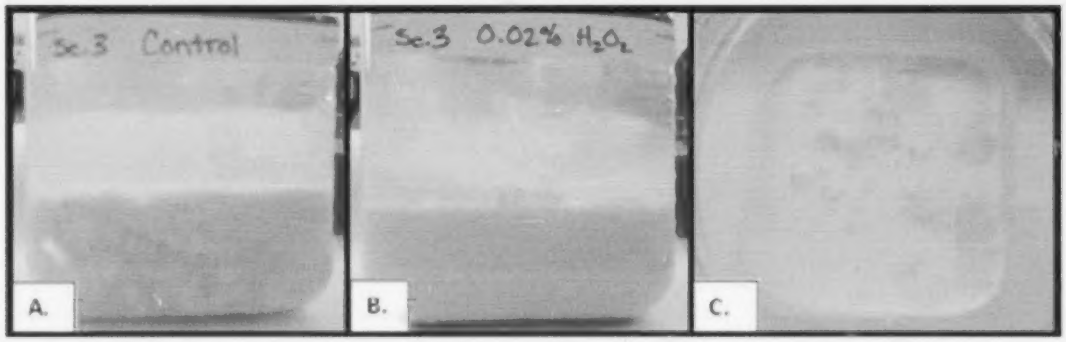

Figure 2. Appearance of the three milk replacer mixtures in treatment 3. Milk replacer without added H_2O_2 shows obvious separation (A), while both the 0.02% (B) and 0.035% (C) H_2O_2 mixtures do not. A pink coloured material (C) was observed floating on top of both H_2O_2 treated samples. (Note: online versions shows pictures in colour)

treatment. The pH declined first in the samples with no added H2O2 regardless of treatment. After 52 hours, all of the acidified milk replacer samples without H2O2 had developed a foul odor, had separated, and dropped to a pH between 4.57 and 4.85.

The hydrogen peroxide treated samples maintained a normal smell, with the exception of the 0.02% treated mixture in treatment 3, which developed a sour smell at 52 hours. There was a smaller decline in pH in the H2O2 treated milk samples when compared to the controls. Figure 2 compares the changes in appearance of the three milk replacer mixtures when using containers that held 125 mL of milk replacer that had previously been held at room temperature for 72 hours (treatment 3). The appearance and consistency of all H2O2 treated milk samples remained relatively normal for the duration of the study, although at 45 hours they developed a pink tinge on the surface.

Conclusion and Future Experiments

The results of this experiment indicate that commercial acidified goat milk replacer held at room temperature did not show signs of spoilage (low pH or separation) for approximately 29 hours when clean containers were used. However, if unwashed containers or containers with already spoiled milk were used, acidified milk replacer showed evidence of spoilage within a few hours. When the acidified goat milk replacer was treated with hydrogen peroxide, it maintained freshness until 52 hours when clean or unwashed containers were used. If mixed in containers which contained spoiled milk, milk replacer remained free for approximately 30 hours (0.02% H202) or 40 hours (0.035% H2)2). This experiment revealed that adding food grade hydrogen peroxide to milk replacer to achieve a final concentration of 0.02% will maintain milk replacer freshness for up to 45 hours longer when compared to untreated acidified milk replacer. Additional studies are required to determine if hydrogen peroxide affects palatability, and what effect higher temperatures will have on spoilage rates.

Reference:
Saha, B. k., et al, 2003. Study on the preservation of raw milk with hydrogen peroxide for rural dairy farmers. Pakistan Journal or Nutrition, 2(1): 36-42.

To Make 1L of Milk Replacer:
-150g Milk Replacer powder
- 500mL hot water
- 450mL cold water
Blend powder and hot water for 3 minutes. Add cold water and blend for another 3 minutes.

To Make 1L of 0.02% Hydrogen Peroxide Milk Replacer:
Use above recipe to make 1L of milk replacer. Add 0.57mL of food-grade 35% hydrogen peroxide and blend for 1 minute.

To Make 1L of 0.035% Hydrogen Peroxide Milk Replacer:
Use above recipe to make 1L of milk replacer. Add 1mL of food-grade 35% hydrogen peroxide and blend for 1 minute.

Info-Bits from the Dairy Herd Management Certificate Update, June 2014

Provided by post-graduate students with the Department of Population Medicine, OVC.

1. **Selective Dry Cow Therapy – Time to re-think?**
   Alex Watters, Dr. Elise Tatone and Jennifer Reynen

Concern about a rise in antimicrobial resistance has increased the scrutiny of antibiotic use in the food animal industry. Prophylactic antibiotic therapies have been banned in some jurisdictions, notably the Netherlands (NL). The blanket use of antimicrobial therapy at dry off time for mastitis treatment and prevention, potentially used in uninfected cows, therefore is banned in the NL and under scrutiny in other countries.

At the recent Dairy Health Management Certificate Program Update meeting at the Ontario Veterinary College, Dr. Martin Green of the University of Nottingham shared his experience with a selective antibiotic dry cow therapy program. At dry-off, cows at a higher risk of intra-mammary infection were chosen for antibiotic dry cow therapy, whereas the remainder of the herd received only a teat sealant to prevent new infections. The decision to treat an individual cow was dependent on a threshold level of somatic cell count (SCC) on the last 3 test days and whether the animal had experienced a case of mastitis within the last lactation. The threshold SCC was determined in consultation with the producer and based on the farm goals, as well as the risk of mastitis infection and transmission on that farm.

Dr. Green reported an economic advantage to selective dry cow therapy and a reduction of antibiotic use at dry-off of up to 70%, depending on the farm. Selective dry cow therapy programs targeted to the cow-level were preferable to herd- or quarter-level programs to promote prudent antibiotic use while ensuring prevention and reduction of intramammary infection during the dry period. Some keys to success for reducing mastitis starting in the dry period included setting farm specific thresholds, addressing related management factors concurrently and including routine follow-up to changes and therapy in the overall mastitis prevention program.

2. **The UK's DairyCo Mastitis Plan**
   Erin Wynands

At the update meeting Dr. Martin Green from the University of Nottingham spoke about the nationwide mastitis control scheme in Great Britain (GB). Udder health is a concern in GB with both high rates of clinical mastitis and high bulk tank somatic cell counts. A national approach to controlling mastitis was initiated and funded by GB dairy producers via their levy board. The DairyCo Mastitis Control Plan takes a risk-based and farm-specific approach to mastitis control. Trained veterinarians and consultants (250 in the first 3 years) use milk recording and recorded clinical mastitis herd data and specialized epidemiological software on client's farms to identify mastitis patterns and to compare farm management to best practices defined by the Plan. This information is used to make an agreed upon action plan with the farm staff. Every 3-4 months the farm data are used to re-assess the targeted control plan. The first participants were trained in April 2009 and so far the plan has been used on herds containing 15-20% of the cows in GB. Analysis after three years of the program shows that herds that that complied with Plan recommendations reduced the incidence of new intramammary infections and SCCs.

To learn more about DairyCo Mastitis Plan see the website http://www.mastitiscontrolplan.co.uk/
A webinar with a report on the first three years of the plan given by Dr. Green is on YouTube at http://youtu.be/aCFMhVT9YkE

3. **What I Learned at DHMCP – The udder has a microbiome!**
   Dr. Cynthia Miltenburg

The current concept, that a pathogen causes disease in an otherwise "sterile" udder, is being turned on its head with the discovery that the mammary gland has

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a microbiome – a community of commensal, symbiotic and pathogenic microorganisms. Microbiomes have been described in the gut, mouth and skin, so why not the mammary gland? Recent studies in humans suggest there is a complex, sometimes changing community of bacteria in human mammary glands free of mastitis. Dr. Martin Green presented research showing cows in the 20,000 to 50,000 cells/ml SCC range have a different microbial community than cows of lower or higher SCC. This is particularly interesting as cows in this range are at lowest risk of intramammary infection. Dr. Green hypothesizes that there is a natural community of bacteria in the cow udder that is present before the cow is suckled by its calf and that this community might play an important role in prevention of mastitis. If this true, a better understanding of farm practices that may interrupt this microbiome, such as dry cow treatment in uninfected cows, and new approaches to improve prevention of intramammary infections may come to light.

4. Economics of Reproduction in Dairy Herds
Dr. José Denis-Robichaud

Reproduction influences the productivity of a cow. Consequently, the decisions made by producers concerning reproductive management have a significant economic impact on their business. Dr. Julio Giordano presented a tool, developed by the Universities of Wisconsin and Cornell, to predict the economic impact of changes in reproduction management (available at: http://www.ansci.cornell.edu/dm/dairy_repro_tool.html). Using a modelled scenario, Dr. Giordano presented the value of improving the 21d-pregnancy rate (21d-PR), "cherry picking" (breeding some cows after heat detection and others with a synch program) and reducing the interbreeding interval. He found that the relationship between 21d-PR and economic potential gain is non-linear: the value of improving the 21d-PR up to 24% can be substantial, but beyond this point the return is often marginal. Also, this relationship is influenced by the farm itself, the reproductive program used, the culling policy, and the labor (both needed and available).

Secondly, the economic impact of "cherry picking" can be evaluated by knowing the percentage of cows bred with this approach and the conception risk resulting from it. Again, the economic value of "cherry picking" will vary from farm to farm, but can be evaluated (and re-evaluated once implemented) using the software formerly presented.

Thirdly, the value of reducing the interbreeding interval by using an early non-pregnancy diagnosis (such as ultrasound or blood test) is influenced by both the sensitivity of the test and the percentage of pregnancies lost, which can vary between farms. When considering early non-pregnancy diagnosis, it is also important to implement aggressive reproductive protocols. In conclusion, decision-making for reproduction management has the potential to influence the profitability of dairy farms. The economic value of a change in reproduction management should, and now can, be evaluated for any specific farm.

5. Hormone programs – here, but for how long?
Craig LeRoy

Many dairy farms heavily rely on the use of timed AI programs to get their cows pregnant. This practice can be very successful at getting cows in calf and managing labour costs but is this system always going to be accepted by the consumers of dairy products?

From an animal welfare and food safety standpoint a day could come when the consumer won't want to buy a product that has been produced by cows treated with these hormones. There are farms that have attempted to change their management systems to not using Timed AI but many owners end up switching back due to poor reproductive results. The dairy industry should be proactive in continuing to develop other methods of getting cows bred before the day comes where this change is forced upon us.

The Brains of Animals

Amit Majmudar

December 14, 2013

From The Browser December 14 2013, http://www.kenyonreview.org/2013/12/brains-animals/

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The radiologist in me had his interest piqued recently by a documentary that flashed an orca's brain MRI (Blackfish). I started looking at every image and article Google Scholar could find me about veterinary neuroradiology. I confess I am astonished at how much mammalian brains resemble one another in their organization, architecture, and complexity. Just as human beings possess only a marginal genetic difference from the next "lower" order of primate–all our languages, sciences, tools, and arts the result of this smidgen of code–it appears that the raw matter of thought and perception is, neuroanatomically, subject to only minor variations in organization.

But considerable differences, I notice, in developmental emphasis. That is, animal brain MRIs, compared to human brain MRIs, show strikingly "superhuman" development in selected areas. We have known for centuries that elephants have long memories; the hippocampus is the seat of memory in human beings; the elephant brain looks like a human brain, only with the most gargantuan (the most elephantine) hippocampus imaginable, which is in turn intensely crinkled and convoluted. (Which means there's a greater surface area, and hence more "processing" going on there.) On that scan, the hippocampus was the place my radiologist's eye jumped to as I realized—slowly—that I was not looking at a human brain. My first radiological impression, though, was one of familiarity.

Similarly, the olfactory bulb, responsible for the sense of smell, is several times larger in dogs compared to humans, as you would expect. The orca happens to have an extremely crinkly (compared to us) limbic and paralimbic area, two areas which in mammals process emotion. This superhuman development correlates well with the behaviors of orca pods and human families. Human families fragment when the young reach adulthood, with the young splitting off and starting new families of their own, sometimes in far-flung cities. The pair bonding between the father and mother may break down well before that (we call this "divorce"). Among orcas, adults never leave their mothers; everybody travels together, and apparently each pod has its own language—a well-known communicative prowess that may relate to its unusually well-developed operculum.

There may come a time when we cease to regard animals as inferior, preliminary iterations of the human—with the human thought of as the pinnacle of evolution so far—and instead regard all forms of life as fugue-like elaborations of a single musical theme.

Animals are routinely superhuman in one way or another. They outstrip us in this or that perceptual or physical ability, and we think nothing of it. It is only our kind of superiority (in the use of tools, basically) that we select as the marker of "real" superiority. A human being with an elephant's hippocampus would end up like Funes the Memorious in the story by Borges; a human being with a dog's olfactory bulb would become a Vermeer of scent, but his art would be lost on the rest of us, with our visually dominated brains. The poetry of the orcas is yet to be translated; I suspect that the whale sagas will have much more interesting things in them than the tablets and inscriptions of Sumer and Akkad.

If science should ever persuade people of this biological unity, it would be of far greater benefit to the species than penicillin or cardiopulmonary bypass; of far greater benefit to the planet than the piecemeal successes of environmental activism. We will have arrived, by study and reasoning, at the intuitive, mystical insights of poets. We will finally live and believe as Whitman did:

I believe a leaf of grass is no less than the journey-work of the stars,
And the pismire is equally perfect, and a grain of sand, and the egg of the wren,
And the tree-toad is a chef-d'œuvre for the highest,
And the running blackberry would adorn the parlors of heaven,

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And the narrowest hinge in my hand puts to scorn all machinery,
And the cow crunching with depress'd head surpasses any statue,
And a mouse is miracle enough to stagger sextillions of infidels.

Rabies Vaccination Technical Reminder

Maureen Anderson, Animal Health & Welfare, OMAFRA, Guelph
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Since the federal rabies program transition on April 1, 2014, OMAFRA has been handling risk assessment of, and response to, incidents involving potential rabies exposure of domestic animals across Ontario. Based on the 134 calls received to date, as well as numerous general inquiries, a brief review of rabies vaccination requirements, dos and don'ts appears to be in order.

According to the Ontario Health Protection and Promotion Act (HPPA), Regulation 567, the following types of animals are required to be immunized against rabies and to be re-immunized according to the label directions of the specific vaccine product used. The vaccine product must be licensed for use in Canada and administered by a registered veterinarian:

- ALL dogs and cats over 3 months of age, required in 31 of 36 Health Units
- Horses, cattle and sheep that may have contact with any person other than their owners or caretakers, required in 7 of 36 Health Units

For a full list of the applicable health units, go to: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900567_e.htm

Always follow the label directions for the vaccine product used. For products available in Canada, this means:

- One dose at 3 months of age (or older)
- One dose 1 year later (i.e. 15 months of age if first vaccinated at 3 months of age)
- An additional dose every 1-3 years thereafter, according to label

According to the College of Veterinarians of Ontario Position Statement on Rabies Vaccinations (available at www.cvo.org) licensed practitioners with food-animal and equine mobiles are allowed to vaccinate farm dogs and cats against rabies. This is strongly encouraged as these animals may be more likely to have contact with wildlife based on their lifestyle, and may not otherwise be seen by a veterinarian for vaccination.

Rabies Risk & Vaccination Status

Currently, OMAFRA continues to use the recommendations previously established by the CFIA for observation and confinement of animals potentially exposed to rabies, which depend on the animal's vaccination status.

- **Fully vaccinated**: An animal that has received an initial rabies vaccination and revaccination at the manufacturer's recommended interval(s).
  *Potential exposure to rabies = 45 DAY OWNER OBSERVATION PERIOD
- **Primary vaccinated**: An animal that has received an initial rabies vaccination at least 30 days earlier, but is not yet due for its first booster according to the manufacturer's recommendations (i.e. less than 1 year since initial vaccination).
  *Potential exposure to rabies = 3 MONTH PRECAUTIONARY CONFINEMENT PERIOD
- **Unvaccinated:** An animal that has never received a rabies vaccination OR received its first rabies vaccination in the last 30 days OR has not been revaccinated within the manufacturer's recommended time frame (i.e. is overdue for a booster)
  *Potential exposure to rabies = 6 MONTH PRECAUTIONARY CONFINEMENT PERIOD

OMAFRA has placed 14 animals under confinement in the last 3 months, including 4 that were exposed to a confirmed rabies-positive bat. All of these could have been avoided had the animals been kept up-to-date on their rabies vaccinations.

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A note about indoor cats: It is extremely important to stress the need for rabies vaccination to pet owners, including those who own indoor-only cats. Calls are frequently received from cat owners who have been surprised to find their cats playing with a bat in the house / apartment, or whose cats escaped outside for a few hours to a few days and returned with suspicious bite wounds. Confinement of such animals can be extremely stressful on pet and owner alike, particularly in multi-person and multi-animal households. Vaccination prevents this worry.

Also emphasize to owners that, if they find a bat (or other wildlife) with which one of their pets (or a person) may have had contact, they should not release it or discard it until a risk evaluation has been performed to determine if the wildlife should be tested for rabies.

Potentially exposed animals: To vaccinate or not to vaccinate?

DO vaccinate animals that may have recently been exposed to a potentially rabid animal (e.g. the cat that was found playing with a bat last night, the dog that got into a fight with a fox on the weekend). This is based on the same rationale as post-exposure prophylaxis (PEP) in people, which is to boost antibody levels to help prevent any virus at the local site of entry from reaching the central nervous system. This applies to animals that are completely unvaccinated or may soon be due for a booster (e.g. the booster can be given early).

Do NOT vaccinate animals that have bitten a person in the last 10 days (or 14 days for animals other than dogs and cats), regardless of the potential that the animal may have been exposed to rabies. Any domestic mammal that has bitten a person must undergo a 10-14 day observation period imposed by Public Health to rule out human exposure to rabies virus. After the 10-14 days, the animal can and should be vaccinated as indicated.

Canadian Quality Milk – The Impact of Training in Ontario

Ann Godkin, Veterinary Science and Policy, OMAFRA and
Eric Snow, Assurance Programs Administrator, Dairy Farmers of Ontario

In Ontario producers can be assisted to prepare for their first Canadian Quality Milk validation by a trained CQM Advisors. Advisors are jointly trained by Dairy Farmers of Ontario (DFO) staff and by Dr. Kelly Barratt, representing the Ontario Association of Bovine Practitioners. A total of 196 people have been trained and serve as CQM Advisors, including 180 private veterinarians and 16 non-veterinarians. Producers can voluntarily select the level of participation they feel they require. They can do no training, just a small group classroom session with an Advisor, just an individual "on-farm" session with an Advisor or can select full training and do both the classroom and the follow-up on-farm session with the Advisor.

As of April 2014 2,901 dairy producer operations have been CQM validated in Ontario. The impact of producers working with an Advisor to prepare is documented in the table below. With increasing participation in more training the rate of successful first validations increases. With approximately 1000 producers still to be validated it is clear that participating in full training reduces complications and is more likely to ensure successful first CQM validation visit.

CQM Training as of April 2014

Producer's training level	All Farms		Producers recommended for approval on 1st CQM validation visit (no follow-up required)	
	Number	% of farms visited for CQM validation	Number	% of farms at this training level
Enlisted no training	552	19.0%	210	38.0%
On farm session only	919	31.7%	599	65.2%
Classroom session only	427	14.7%	252	59.0%
Full training (Class and farm sessions)	1,003	34.6%	777	77.5%
TOTAL:	2,901	100.0%	1,838	37%

Continuing Education/Coming Events

July 30-31, 2014	Bovine Respiratory Disease Symposium (BRDS) 2014: New Approaches to Bovine Respiratory Disease Prevention, Management and Diagnosis, Renaissance Denver Hotel in Denver, Colorado, US, in conjunction with the 2014 Summer Academy of Veterinary Consultants (AVC), July 31st - August 2nd, 2014. *www.brdsymposium.org*
August 4, 5 & 6, 2014	National Mastitis Council Regional Meeting 2014 , Ghent University (AULA) , Ghent, Belgium *www.nmc2014.ugent.be/v1/home*
September 9, 2014	24th Annual Swine Health and Production Conference, Western Illinois University Union, Macomb, Illinois *www.hogvet.com/conf-overview.htm*
September 10-12, 2014	Canada's Outdoor Farm Show, Woodstock, ON *www.outdoorfarmshow.com*
September 13-16, 2014	Allen D. Leman Swine Conference, St. Paul RiverCentre, St. Paul, Minnesota *www.LemanSwineConference.org*
September 18-20, 2014	47th Annual Conference of the American Association of Bovine Practitioners, meeting jointly with the American Association of Small Ruminant Practitioners, Albuquerque, New Mexico. *www.aabp.org*
September 24, 2014	Shakespeare Swine Seminar, Shakespeare Community Centre
October 16-22, 2014	2014 USAHA and AAVLD Joint Annual Meeting, Sheraton Kansas City at Crown Center Kansas City, Missouri *www.usaha.org/Home.aspx*
October 17-18, 2014	2014 OASV Fall Conference, Benmiller Inn & Spa, Goderich, ON *www.oasv.ca*
October 20-22, 2014	2014 Leman China Swine Conference, Qujiang International Conference Center Xi'an, China *www.cvm.umn.edu/lemanchina/*
October 25-28	CanWest Veterinary Conference, Banff, Alberta, *www.canwestconference.ca*
November 2-5, 2014	Animal Welfare Symposium 2014: Humane Endings – In Search of Best Practices for Euthanasia, Humane Slaughter and the Depopulation of Animals, The Westin O'Hare, Rosemont, Illinois *www.avma.org/Events/Symposiums/Pages/2014-Humane-Endings-Symposium.aspx?*
November 4 & 6, 2014	November Sheep Seminars "Take a Flock Physical" and "Preventative Health Care for your Flock", Napanee (November 4) and Guelph (November 6)
November 5, 2014	Small Ruminants Veterinarians of Ontario (SRVO) Fall Continuing Education & Meeting *www.srvo.ca/*
November 13-14, 2014	DCRC Annual Meeting, Hilton Salt Lake City Centre, Salt Lake City, Utah, US *www.dcrcouncil.org/meetings.aspx*
November 13-14, 2014	Swine Disease Conference for Swine Practitioners, Iowa State University Ames, Iowa USA Email: *registrations@iastate.edu*
November 19-20, 2014	OABP Fall CE and Annual General Meeting, Delta Hotel, Guelph *www.oabp.ca*
December 2, 2014	Healthy Calf Conference, Stratford, ON (remote link to Northern Ontario) *www.calfcare.ca*
December 4, 2014	Healthy Calf Conference, Maxville, ON *www.calfcare.ca*
December 5 & 6, 2014	2014 North American PRRS Symposium and PED Update, InterContinental Hotel, Chicago, Illinois. Email: *vmce@vet.k-state.edu www.prrssymposium.org/*
December 6-13, 2014,	American Association of Equine Practitioners 60th Annual Convention, Salt Palace Convention Centre, Salt Lake City, Utah. *www.aaep.org/info/annual-convention-318*
February 1-3, 2015	National Mastitis Council 54nd Annual Meeting, Memphis, Tennessee. *www.nmconline.org*
February 28-March 3,	46th Annual Meeting of the American Association of Swine Veterinarians, Buena Vista Palace Hotel 2015 and Spa, Orlando, Florida. *www.aasv.org/annmtg*

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